CLAIMS

1. An optical system comprising:

an optical filter having an optical filter component and a tuning assembly, said optical filter defining an optical path;

said optical filter component having a propagation axis, said optical filter component exhibiting a length of physical path along said optical path of said optical filter, said optical filter component being adapted to receive an optical signal such that, in response to the optical signal, said optical filter component propagates at least a first frequency of light;

said tuning assembly engaging said optical filter component, said tuning assembly being adapted to alter said length of said physical path of said optical filter component along said propagation axis such that said optical filter component propagates at least a second frequency of light in response to the optical signal, the second frequency of light being different from the first frequency of light.

2. The optical system of claim 1, wherein said tuning assembly includes a housing, said housing at least partially encasing said optical filter component.

3. The optical system of claim 2, wherein said tuning assembly includes a retaining member adjustably engaging said housing; and

wherein said optical filter component is arranged between said retaining member and at least a portion of said housing such that adjusting a position of said retaining member relative to said housing can change said length of said physical path of said filter component along said propagation axis.

4. The optical system of claim 3, wherein said housing defines a cavity and an opening, said cavity optically communicating with said opening, said opening being adapted to receive the optical signal; and

wherein said filter component is arranged within said cavity.

5. The optical system of claim 4, wherein said tuning assembly includes a force-compensating member, said force-compensating member being arranged within said cavity between said retaining member and at least a portion of said housing, said being adapted to expand to apply a compressive force to said optical filter component.

6. The optical system of claim 5, wherein said force-compensating member is formed of a piezoelectric material and is adapted to expand in response to an applied voltage.

7. The optical system of claim 5, wherein said force-compensating member is formed of a material exhibiting a coefficient of thermal expansion selected to substantially maintain the compressive force applied to said optical filter component when said optical filter deforms in response to a change in temperature.

8. The optical system of claim 5, wherein said force-compensating member is annular in shape.

9. The optical system of claim 5, wherein said tuning assembly is adapted to compress said optical filter component to decrease said length of said physical path.

10. The optical system of claim 1, wherein said tuning assembly includes a housing and a first force distribution member, said housing defining a cavity and an opening, said cavity optically communicating with said opening, said opening being adapted to receive the optical signal, said optical filter component being arranged within said cavity, said first force distribution member arranged within said cavity between said opening and said optical filter component, said first force distribution member being configured to transmit compressive force substantially uniformly to said optical filter component.

11. The optical system of claim 10, wherein said first force distribution member is more rigid than said optical filter component.

12. The optical system of claim 10, wherein said first surface of said first force distribution member is substantially planar.

13. The optical system of claim 1, wherein said tuning assembly is adapted to tension said optical filter component to increase said length of said physical path.

14. The optical system of claim 1, wherein said optical filter is an optical bandpass filter.

15. An optical system comprising:

an optical filter defining an optical path, said optical filter having an optical filter component, said optical filter component having a propagation axis, said optical filter component exhibiting a length of physical path along said optical path of said optical filter, said optical filter component being adapted to receive an optical signal such that, in response to the optical signal, said optical filter component propagates at least a first frequency of light; and

means for altering said length of said physical path of said optical filter component along said propagation axis such that said optical filter component propagates at least a second frequency of light in response to the optical signal, the second frequency of light being different from the first frequency of light.

16. A method for tuning an optical filter, the optical filter defining an optical path and being adapted to propagate an optical signal along the optical path, said method comprising:

providing an optical filter component having a propagation axis;

arranging the optical filter component along the optical path, the optical filter component exhibiting a length of physical path along the propagation axis, the optical filter component being adapted to receive the optical signal such that, in response to the optical signal, the optical filter component propagates at least a first frequency of light along the optical path; and

altering the length of the physical path of the optical filter component along the propagation axis such that the optical filter component propagates at least a second frequency of light along the optical path in response to the optical signal, the second frequency of light being different from the first frequency of light.

17. The method of claim 16, wherein altering the length of the physical path along the propagation axis includes decreasing the length of the physical path.

18. The method of claim 17, wherein the length of the physical path is decreased by compressing at least a portion of the optical filter component.

19. The method of claim 16, wherein altering the length of the physical path along the propagation axis includes increasing the length of the physical path.

20. The method of claim 19, wherein the length of said physical path is increased by placing at least a portion of the optical filter component under tension.

21. The method of claim 16, further comprising:

tilting the filter component so that the propagation axis of the filter component and the optical path are not parallel.

22. A method for propagating an optical signal along an optical path comprising:

providing a first material:

arranging the first material along the optical path, the first material exhibiting a length of physical path along the optical path;

receiving an optical signal at the first material; and

altering the length of the physical path to alter a characteristic of the optical signal by at least one of compressing and tensioning the first material.

23. The method of claim 22, wherein the first material forms at least a portion of an optical bandpass filter.

24. The method of claim 23, wherein, in altering the length of the physical path, a center frequency of the optical bandpass filter is altered.

25. The method of claim 24, wherein altering the length of the physical path is accomplished to reduce drift of the center frequency.